

18. (New) An optical system according to Claim 11, wherein each of said first diffraction optical part and said second diffraction optical part comprises a diffraction grating, and wherein the diffraction gratings have blazed shapes oriented in opposing directions.--

REMARKS

Reconsideration and allowance of the subject application are respectfully solicited.

Claims 1, 4, 7, 11, 13, 15, 17, and 18 are pending, with Claims 1 and 11 being independent. Claims 3, 6, 8, 12, 14, and 16 have been cancelled without prejudice. Claims 1, 4, 7, 11, 13, and 15 have been amended. Claims 17 and 18 have been added.

Claims 11 through 16 were variously rejected under 35 U.S.C. §§ 102 and 103 over U.S. Patent No. 5,636,000 (Ushida, et al.). All rejections are respectfully traversed.

Claim 11 recites, inter alia, that the layered diffraction optical member is formed to have high diffraction efficiency for diffracted light of a particular order over a visible wavelength range to be used in the optical system.

However, Applicant respectfully submits that Ushida fails to disclose or suggest at least the above-discussed claimed features as recited, inter alia, in Claim 11.

Applicant respectfully submits that Ushida discloses, e.g., a photolithographic projection optical system and makes reference to, e.g., "deep ultraviolet region", but fails to disclose or suggest at least the above-discussed claimed features including the recited "visible wavelength range". By means of such features, Applicant respectfully submits that it is possible to suppress a lowering of the diffraction efficiency due to the dependency thereof upon the incident angle of light.

Furthermore, the assertion in the Official Action that the claimed features are "standard" is

respectfully traversed as being without support. It is further respectfully submitted that there has been no showing of any indication of motivation in the cited document that would lead one having ordinary skill in the art to arrive at such claimed features.

Claims 1, 3, 4, and 6 through 8 were rejected under 35 U.S.C. § 103 over U.S. Patent No. 6,097,547 (Ogata, et al.). All rejections are respectfully traversed.

Claim 1 recites, inter alia, a layered diffraction optical member laminated with a plurality of diffraction parts, wherein the layered diffraction optical member is formed to have high diffraction efficiency for diffracted light of a particular order over a visible wavelength range to be used in the optical system.

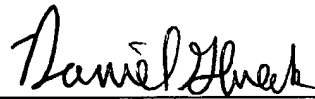
However, Applicant respectfully submits that Ogata, et al. fails to disclose or suggest at least the above-discussed claimed features as recited, inter alia, in Claim 1. Applicant respectfully submits that the diffractive surfaces in Ogata, et al. are on different optical members, and that Ogata, et al. cannot have high diffraction efficiency for diffracted light of a particular order over an entire visible wavelength range as claimed. Furthermore, the assertion in the Official Action that the claimed features constitute obvious "design choice" is respectfully traversed as being without support. It is further respectfully submitted that there has been no showing of any indication of motivation in the cited document that would lead one having ordinary skill in the art to arrive at such claimed features.

The dependent claims are also submitted to be patentable because they set forth additional aspects of the present invention and are dependent from independent claims discussed above. Therefore, separate and individual consideration of each dependent claim is respectfully requested.

Applicant submits that this application is in condition for allowance, and a Notice of Allowance is respectfully requested.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,



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MARKED-UP CLAIM SHEET

1. (Twice Amended) An optical system comprising,

[an iris, and]

a layered diffraction optical [device] member laminated with a plurality of diffraction [elements] parts, wherein said layered diffraction optical [device] member is provided in front of [said iris] a pupil,

wherein said layered diffraction optical [device] member includes a first diffraction [element] part of negative power and a second diffraction [element] part of positive power provided behind said first diffraction [element] part,

wherein said first diffraction part and said second diffraction part are made of materials having dispersion characteristics different from each other, and

wherein said layered diffraction optical member is formed to have high diffraction efficiency for diffracted light of a particular order over a visible wavelength range to be used in said optical system.

4. (Twice Amended) An optical system according to Claim 1, wherein an air layer is interposed between said first diffraction [element] part and said second diffraction [element] part.

7. (Twice Amended) An optical system according to Claim 1 further comprising[,] a refraction optical [device] member.

11. (Amended) An optical system comprising:

[an iris, and]

a layered diffraction optical [device] member laminated with a plurality of diffraction [elements] parts, wherein said layered diffraction optical [device] member is provided behind [said iris] a pupil,

wherein said layered diffraction optical [device] member includes a first diffraction [element] part of positive power and a second diffraction [element] part of negative power provided behind said first diffraction [element] part.

wherein said first diffraction part and said second diffraction part are made of materials having dispersion characteristics different from each other, and

wherein said layered diffraction optical member is formed to have high diffraction efficiency for diffracted light of a particular order over a visible wavelength range to be used in said optical system.

13. (Amended) An optical system according to Claim 11, wherein an air layer is interposed between said first diffraction [element] part and said second diffraction [element] part.

15. (Amended) An optical system according to Claim 11, further comprising[:]
a refraction optical [device] member.

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